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Small Business Preferences as a Barrier to Growth: Not so Tall After All

Federal and provincial governments provide tax supports for small businesses. What are the unintended consequences, and their economic costs?

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The Study In Brief

Special supports for small businesses are a hallmark of both federal and provincial tax policy. There are two major federal programs: the Small Business Deduction (SBD), which provides small business a special lower income tax rate, and the enhanced Scientific Research and Experimental Development (SR&ED) investment tax credit. The purpose of these programs is to improve overall economic performance by mitigating inefficiencies in the market. However, since receiving benefits is conditional on staying small, these programs could act as a barrier to growth.

This *Commentary* makes use of newly available tax data for individual firms to investigate the effect of the tax wall firms face as they grow. We find that the SR&ED thresholds are set high enough that their impact on investment decisions is negligible. Similarly, while the SBD thresholds affect more firms, that program has only a minor impact on investment by small firms.

Nevertheless, such supports for small business have a social cost. The largest cost arises from the fact that the government must recoup forgone tax revenue by cutting spending or imposing higher taxes elsewhere. If the alternative to the SBD is a lower general corporate income tax rate, the net impact of the SBD will be an expansion of the small business sector at the expense of large businesses. Since small firms are less productive than large firms, overall economic performance would suffer as a result of the SBD. A more effective way of spurring economic growth is to reduce corporate income tax rates for all firms rather than providing preferential tax rates for small businesses.

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Small firms enjoy many tax preferences and more favourable access to government subsidy programs than large firms. Governments provide these preferences with the intention of improving overall economic performance by mitigating what economists call "market failures."[1]

However, since access to these preferences is conditional on remaining small, these programs could have the unintended consequence of causing firms to forgo opportunities to grow, which would reduce the benefits of government intervention.

The small business deduction (SBD) and the enhanced Scientific Research and Experimental Development (SR&ED) credit are the two largest small business tax preferences provided by the federal government, resulting in forgone tax revenue of $3.2 billion and $1.4 billion, respectively, in 2014 (Finance Canada 2015). All provincial governments have a special low corporate income tax rate for small business, but only Quebec and Ontario provide extra support for R&D undertaken by small firms.

Small firms face a lower federal corporate income tax rate on up to $500,000 in income provided they have less than $10 million in assets. The amount of income eligible for the low rate falls to zero as assets increase from $10 million to $15 million. This claw-back results in marginal tax rates in the phase-out zone that are much higher than the tax rate applied to large firms.

Small firms also receive a substantially higher tax credit on R&D investment than larger firms. The federal government caps the amount of R&D spending eligible for this credit at $3 million, but this limit is reduced to zero as taxable income and assets increase above certain thresholds. Loss of access to the enhanced credit creates a disincentive to undertake additional R&D investment, but loss of the preference also reduces the incentive to invest in tangible assets because such investment raises taxable income, which in turn reduces the amount of R&D eligible for the enhanced credit.

While the incentive effects of both measures are substantial, larger size confers a number of benefits such as economies of scale, improved access to financing and a stronger presence in the marketplace. These advantages are, up to a point, a rising share of costs as firms grow, but loss of the tax preference causes costs to rise by a fixed percentage. As a result, there will be a point at which the benefits from growth exceed the cost of losing access to the tax preference. However, firms with a target size that is only slightly greater than the size at which threshold effects occur would have an

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1 When markets are working perfectly, economic resources – capital, labour and materials – are allocated in a way that maximizes the value of output. A market failure means that resources are not being used as efficiently as they could be. In principle, government action to correct the market failure will improve economic performance, but the costs of intervention could exceed the benefits of correcting the market failure.

incentive to curtail investment plans to avoid losing access to preferential tax treatment.

This *Commentary* makes use of tax micro data available through the Canadian Centre for Data Development and Economic Research (CDER) at Statistics Canada to assess the extent to which these changes in investment incentives act as a tax wall that inhibits the growth of recipients. If these threshold effects influence firm behaviour, we would expect to see firms clustering around the point at which they lose access to the preferences.

Our analysis shows clustering at the income threshold for the SBD as well as within the asset phase-out range that is consistent with adverse effects on investment. However, the impact is small: the SBD did not impose a substantial barrier to the growth of small firms in 2009, and since then the small business tax advantage has become smaller. The minor effects on investment result from relatively high asset thresholds and the low value of the SBD relative to the benefits from a large increase in firm size – it would not be rational for entrepreneurs to abandon an aggressive growth path due to loss of a relatively small tax benefit. Threshold effects also raise the fiscal cost of the SBD as firms use tax-planning techniques and restrict investment to retain access to benefits, but the increase is a small percentage of the total fiscal cost of the program.

We also observe clustering for the enhanced SR&ED credit. However, since most firms claiming this tax credit spend much less on R&D than the maximum eligible amount, have small amounts of capital and are unprofitable, the SR&ED thresholds affect only a very small number of firms.

Threshold effects are not, however, the only social cost imposed by the two programs examined in this *Commentary*. For example, Lester (2012) undertook a benefit-cost analysis of the enhanced SR&ED tax credit and concluded that the social costs exceeded the social benefits in 2007 by about 12 percent of the forgone tax revenue. Our illustrative benefit-cost analysis of the SBD indicates that Canada's real income would have been higher in 2009 by about 20 percent of the fiscal cost of the program if the federal and provincial governments had eliminated the SBD and used the savings to reduce the general corporate income tax rate.[2]

LITERATURE REVIEW

Canadian Studies

Several studies have qualitatively explored the question of why small Canadian firms tend not to be growth-oriented (Curry and Scott 2013); Drummond (2011) pointed to the SBD as the root cause. Chen and Mintz (2011) undertook a qualitative assessment of how small business tax preferences create barriers to growth by calculating the effective tax rate on investment as small firms grow. The authors found large increases in the effective tax rate on investment as firms grow and lose access to the SBD and to the lifetime capital gains exemption. In their study, they make a compelling case that the large threshold effects are affecting investment behaviour, but they do not undertake any empirical analysis; nor do they examine the enhanced SR&ED tax credit.

Although there have been many international studies that have used micro data to assess small business tax threshold effects (see Box 1), only two Canadian studies have used micro data to investigate the possibility that the SBD creates a

2 The small business tax advantage has fallen by about 30 percent since 2009. Most of the related social benefits and costs will also fall by approximately 30 percent, so the net social cost would be approximately the same percentage of forgone tax revenue in 2014 as in 2009.

Box 1: International Studies of Threshold Effects from Business Taxes

Threshold effects of business taxation have been examined in at least five other countries. Between 2000 and 2008, the UK implemented a number of tax reforms that changed corporate income tax rates for small businesses, creating kinks in the tax rate schedule at £10,000, £300,000 and £1.5 million in taxable income. Devereux et al. (2013) found a large cluster of firms at the £10,000 threshold and a somewhat less, although still substantial, degree of clustering at the £300,000 threshold. They found a deadweight cost of corporate income tax of 25 percent. Brockmeyer (2013) looked at the income threshold and examined how firms modified their income to minimize their taxes. She found that firms at the £10,000 threshold increased their investment in short-lived assets in order to reduce their taxable income rather than use tax transfer pricing manipulation or tax evasion (such as over-reporting) strategies. But she also found that firms at the £300,000 threshold did not change their investment behaviour.

Garicano et al. (2012) looked at how French firms responded to various regulations that bind a firm once it grows beyond 50 employees. They found that there were a large number of firms with slightly fewer than 50 employees, but relatively few with slightly more than 50 employees. They also determined that the barriers to firm growth beyond 50 employees placed a significant burden on the economy if workers have relatively inflexible wages. However, Gourio and Roys (2014) found a lower economic cost of similar French programs over the same period.

In Spain, Almunia and Lopez-Rodriguez (2014) investigated how a tax-enforcement threshold at about six million euros affected firm behavior. The authors found substantial bunching at income levels close to the tax enforcement threshold. In addition, firms with income levels slightly below the threshold had slower growth than other growing firms. Harju and Matikka (2014) investigated the effect of changes in small business tax measures in Finland. They found evidence of threshold effects and estimated that two-thirds of the cluster is due to tax-motivated income shifting between tax bases.

In many developing countries corporations pay a minimum tax based on turnover and switch to a standard tax on profits when that generates higher tax liabilities. The use of a minimum tax has the advantage of limiting tax evasion opportunities but concern is often expressed that minimum taxes are more harmful to economic efficiency than profit taxes. Best et al. (2014) investigated the relative importance of revenue gains and efficiency losses from minimum taxes in Pakistan by examining clustering at the switching point. Their analysis suggests that the minimum tax raises revenue substantially without harming economic performance.

barrier to growth. Hendricks, Amit and Whistler (1997) found some evidence of clustering at the income threshold for access to the SBD. However, they did not investigate tax planning versus investment effects, nor did they check for clustering at the asset threshold. Finance Canada (2014) investigated whether the SBD is affecting investment decisions. Although the authors of the study found clustering at the SBD income threshold, they did not find it at the start of the asset threshold, leading to the conclusion that the SBD is not affecting investment decisions. In contrast, we argue that some firms clustering at the income threshold are restricting investment. Furthermore, we found evidence of clustering within the asset phase-out range.

There is only one other study that provides a perspective on threshold effects arising from the enhanced SR&ED tax credit. Agrawal, Rosell and Simcoe (2014) used tax micro data to investigate the response of firms to the 2004 increase in the income threshold for claiming the enhanced SR&ED credit. The authors found that R&D investment by affected firms responded more strongly to the decrease in the marginal cost of R&D investment than is typically reported for R&D tax incentives. The authors pointed to the refundability of the enhanced credit, which eases liquidity constraints of small firms, as a possible explanation for this finding. However, the stronger response is also consistent with the view that threshold effects were restricting investment in R&D; the graphical evidence of clustering at the spending threshold presented in the paper supports this interpretation.

Impact of Thresholds on Rates of Return

The Small Business Deduction

Small firms in Canada pay a lower rate of corporate income tax on profits than larger firms. Since 2012, the gap in federal income tax rates in favour of small businesses has been four percentage points, down from 16 points in 2000. Implementation of the 2015 budget will, however, increase the federal tax small business advantage to 6 percentage points by 2019. At the provincial level, the 2014 gap in favour of small business ranged from 13 percentage points in Nova Scotia to 3.9 points in Quebec. The weighted average provincial tax rate applied to small business income was approximately 4.3 percent, compared to 11 percent for the rate applied to large firms. In 2014, the combined federal-provincial corporate income tax rate was 15.3 percent for small business and 26 percent for other firms, resulting in a tax-rate advantage for small firms of 10.7 percentage points, less than half the advantage in 2000.[3]

At the federal level, access to the SBD is restricted to $500,000 in active business income earned by small Canadian-controlled private corporations (CCPCs).[4] The amount of income eligible for the special low rate (the business limit) is reduced as firm assets rise above $10 million and is eliminated when they reach $15 million.[5] This SBD clawback pushes the small business tax rate above the general rate in the asset phase-out range. Most provincial governments follow the federal business limit and phase-out range for assets.[6] (The federal business limit and the corporate income tax rate gap have changed several times since 2000; see the online Appendix for additional information.)

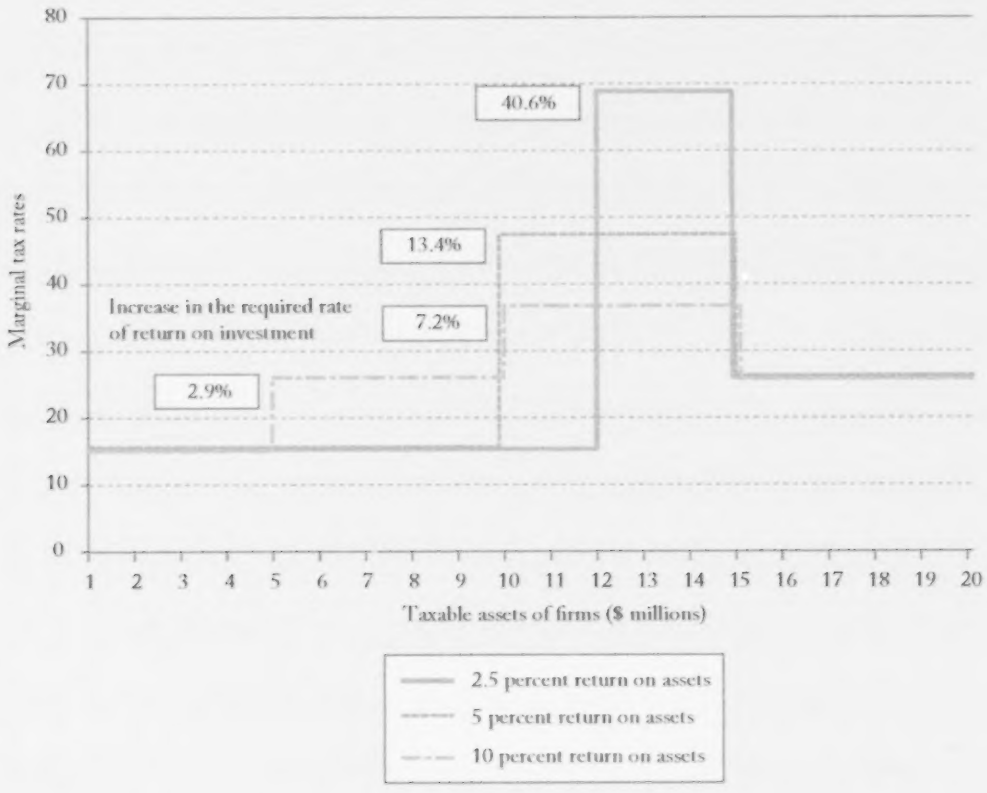
3 The tax-rate data are from the Organisation for Economic Co-operation and Development (2013) for the 2000-2013 period and from Finance Canada (2014) for 2014. Québec announced in its 2015 budget measures that will further reduce the tax rate advantage for small business. The budget announced a 0.4 percentage point reduction in the general corporate income tax rate to 11.5 percent by 2020 and a substantial narrowing of eligibility for the SBD. Effective 2016, only firms with more than three full-time employees operating primarily in the primary and manufacturing sectors will be eligible for the SBD.

4 Income from passive investments and income of incorporated individuals that is similar to employment income are not eligible for the special low income tax rate.

5 More precisely, the asset threshold is defined in terms of a firm's taxable capital, which generally speaking is the sum of shareholders' equity, retained earnings and most of the debt liabilities, less certain types of investments in other corporations. See Finance Canada (2014, p. 53).

6 In 2014, only Nova Scotia and Manitoba had a different business limit than the federal government. Ontario based its phase-out on the active business income of firms until June 2010. From July 2010 to April 2014, it did not claw back the SBD as taxable income rose above the business limit.

Figure 1: Marginal Tax Rates on Income Earned by Small Business in 2014



Note: Marginal tax rates in the chart are calculated for active business income assuming that firms do not have access to any other preferences than the small business deduction.

Source: Authors' calculations.

Given the current structure, firms are subject to four federal marginal tax rates as they grow in size or profits (Figure 1).

- 15.3 percent when taxable income is less than $500,000 and assets are below $10 million;
- 26 percent when taxable income exceeds $500,000 and assets are less than $10 million;
- a clawback rate above 26 percent when assets are between $10 and $15 million; and,
- 26 percent on all income earned when assets exceed $15 million.

The tax rate in the asset phase-out zone is the general rate plus the effective tax rate on the SBD that is recovered. Since the clawback rate equals the value of the deduction claimed divided by the income earned over the clawback range, it rises as the rate of return on assets declines (Figure 1 and Box 2).

The rate of return on assets also affects the asset size at which firms experience an increase in their marginal tax rate as they grow (Figure 1). A firm earning 10 percent on assets will have $500,000

Box 2: Clawback of the Small Business Deduction

The clawback rate rises as the rate of return on assets declines (Figure 1). This inverse relationship arises because the amount of taxable income generated in the phase-out zone rises with the rate of return on assets. For example, if the rate of return on assets is 5 percent, the value of the deduction claimed in 2015 would be $53,500 ((.26-.153)*500,000); since $250,000 in additional income would be earned as assets increase from $10 million to $15 million, the clawback tax rate is 21.4 percent and the overall rate in the asset phase-out zone is 47.4 percent (26 percent + 21.4 percent).

If the rate of return on assets is 10 percent, taxable income will rise $500,000 over the phase-out zone, causing the effective tax rate on the loss of the SBD to fall to 10.7 percent ($53,500 divided by $500,000), giving an overall tax rate of 36.7 percent in the clawback zone. This tax rate rises dramatically to 68.8 percent when the rate of return on assets is 2.5 percent (solid line in Figure 1).

in taxable income when assets reach $5 million. On the other hand, a firm with a 2.5 percent rate of return will not face a higher marginal tax rate until it has $12 million in assets.[7] These increases in the marginal income tax rate influence investment decisions by reducing the rate of return on investment or, equivalently, by requiring a higher pre-tax return on an investment before it will be undertaken. In our research, we determined the impact on the rate of return by calculating the user cost of capital, which will be equal to the rate of return on a firm's marginal investment, with different assumptions about the corporate income tax rate applicable to the investment.

For example, the rate of return on a marginal investment would have to rise by about three percentage points to compensate for a rise in the corporate income tax rate from the preferential small business rate of 15.3 percent to the general corporate rate of 26 percent (boxes in Figure 1). The rate of return would need to rise by substantially more for firms in the clawback zone. (See the online Appendix for the details of this calculation.) As discussed above, the small business tax advantage has declined dramatically since 2000. In that year, losing access to the SBD would have raised the required return approximately nine percentage points, while the increase in the clawback zone would have been approximately twice as large as in 2009.

The Enhanced SR&ED Investment Tax Credit

Small firms also benefit from a higher SR&ED investment tax credit. At the federal level, small and medium-sized CCPCs are eligible for a 35 percent investment tax credit compared to 15 percent for other firms.[8] Since 2008, the enhanced credit has been available on up to $3 million of R&D spending, provided that the firm has prior year

7 With $12 million in assets and a 2.5 percent return, taxable income will be $300,000, but the business limit will fall from $500,000 to $300,000. (The business limit declines by 10 cents for each dollar in assets above $10 million.)

8 The 2012 federal budget reduced the regular SR&ED tax credit from 20 percent to 15 percent, effective in 2014.

taxable income of less than $500,000 and less than $10 million in assets. The $3 million expenditure limit is reduced to zero as taxable income rises from $500,000 to $800,000 and as assets increase from $10 million to $50 million – the expenditure limit is reduced by $10 for each $1 increase in taxable income and by 7.5 cents per $1 increase in assets. Spending above the reduced expenditure limit is eligible for the same 15 percent credit available to larger firms. (Since 2000, the federal government has increased taxable income thresholds four times while the taxable capital and the expenditure limits have increased once each. See online Appendix for details.)

The reduction in the expenditure limit as assets and profits increase obviously affects the incentive to undertake R&D but, as pointed out by Dahlby (2011), such reductions have a more subtle impact on the incentive to invest in the capital used to commercialize R&D or otherwise grow the business. Consider a firm with $500,000 in taxable income arising from a 10 percent return on $5 million in assets in the prior year and spending $3 million (its expenditure limit) on R&D in the current year. If the firm invests an additional $1 million, its taxable income will rise by $100,000 and, since the expenditure limit declines by $10 for each $1 increase in taxable income, the firm's expenditure limit will decline by $1 million.

A firm in this situation could decide to spend less on R&D or forgo the investment because the expected rate of return is not high enough to compensate for the loss of the enhanced R&D tax credit. We determined the required increase in the rate of return to compensate for the loss by comparing the user cost of capital evaluated with a 35 percent and a 15 percent R&D investment tax credit and then adjusting for how investment affects the expenditure limit by raising taxable income. We estimated that the required return increased by about 30 percent in 2014, and almost 25 percent prior to 2014 for a firm earning 10 percent on its assets (see online Appendix).

In contrast to the SBD, the change in the required rate of return for R&D spending moves in the same direction as the rate of return on investment. For example, if the rate of return is 15 percent, the expenditure limit falls $1.50 for a $1 increase in investment, which causes the increase in the required return to rise by slightly more than one-third. The evolution of SR&ED threshold effects since 2000 is discussed in the online Appendix.

Qualitative Assessment of Investment Effects

Given the significant threshold effects of the SBD and the enhanced SR&ED credit, we expected both measures to affect investment decisions. However, increased size offers offsetting advantages such as reduced operating costs, a stronger position in the market and better access to credit. Therefore, a rational entrepreneur would base investment decisions on an evaluation of the expected benefits and costs, including loss of tax preferences, from growing the firm. Loss of the SBD or the SR&ED tax credit raises capital costs by a constant percentage of investment but the benefits from growth tend to increase more than proportionately with the gap between target and actual sizes, so entrepreneurs wanting to grow their firms substantially are likely to conclude that the benefits exceed the cost. In contrast, firms affected by thresholds that have a target size not far above their current size are more likely to conclude that the cost of losing the tax preference exceeds the benefits of a small increase in capacity.

The Small Business Deduction

If threshold effects from the SBD affect firm behaviour, we would expect to see a disproportionate number of firms with taxable income just under the business limit, since firms with a return on assets higher than 5 percent (and hence with less than $10 million in assets) would make adjustments to avoid

Box 3: Planning to Reduce Taxes on Distributions

If a firm does not require income earned in excess of the business limit for investment, working proprietors can choose to distribute this income as dividends or wages. As explained in Finance Canada (2014, p. 62), there was a strong incentive from 2000 to 2005 to distribute excess income as wages because the personal income tax payable was substantially less than the combined corporate and personal income taxes on dividends.

In 2006, the federal government increased the tax credit for corporate income taxes embedded in dividends. This change reduced the tax advantage of wages as a distribution vehicle to around one percentage point for working proprietors paying the highest marginal tax rate on personal income. Firms in the claw-back zone continue to have an incentive to distribute excess income through wages instead of dividends because of the higher marginal corporate income tax rate.

a higher marginal tax rate. The disincentive effects are relatively small for highly profitable firms, but if a firm's target size is not far above the size at which it maximizes SBD benefits, it could be rational to forgo additional investment. (We provide additional detail on this point in the later section discussing the social costs of clustering.) Firms with a rate of return slightly below 5 percent approach the taxable income and asset constraints at the same time, causing a large increase in the marginal tax rate. If their target size does not exceed $15 million, such firms have a strong incentive to restrain investment.

There are, however, a number of factors other than reduced investment that explain clustering at the business limit.

- First, firms may come close to the business limit as a result of temporary increases in taxable income;
- second, as found in the UK by Brockmeyer (2013), firms may time investments and other discretionary expenses to reduce taxable income as they come close to the business limit. In the case of investment, this could involve increasing the wages of working proprietors, who then loan the extra payment to the company; and
- third, clustering at the business limit, prior to 2006, may reflect tax planning to reduce taxes on distributions rather than a decision to restrict firm size (Box 3).

We also expected to see some clustering at the start of the asset threshold, since firms with rates of return of about 5 percent and higher would likely restrain investment to avoid the clawback of SBD benefits. However, given the size distribution of firms, the number of firms involved would be small. Finally, since the reduced business limit (the business limit adjusted for any excess of assets over $10 million) binds at higher asset sizes as the rate of return on assets declines, there could be some clustering throughout the asset phase-out range as well as at the start of the range. (See, for example, the marginal tax rates facing a firm with a 2.5 percent rate of return on assets in Figure 1.)

Clustering at the start of the asset phase-out range by firms with taxable income that exceeds their business limit would be compelling evidence that the SBD is acting as a barrier to growth. In contrast, firm clustering at the reduced business limit likely reflects a combination of investment and tax-planning effects.

In its analysis of the SBD, Finance Canada (2014) found clustering at the business limit but not at the start of the asset threshold, leading to the conclusion that tax planning rather than changes in real behaviour were responsible for the clustering. However, this conclusion may not be justified for two reasons. First, as explained above,

some firms in the business limit cluster have an incentive to restrain investment. Second, it does not take into consideration clustering throughout the asset phase-out range. Furthermore, tax planning is costly: it absorbs resources that firms could use more productively elsewhere and governments must finance the revenue loss associated with such tax planning by imposing higher taxes elsewhere, or cutting spending, both of which harm productivity.

An additional important consideration when assessing the likely importance of investment disincentives is the relationship between thresholds and firm characteristics. That is, the income and asset thresholds could be set so high that only a small number of firms are affected. In 2009, more than one-half of firms claiming the SBD had active business income of less than $50,000, while just under 5 percent (about 28,000 firms) had income ranging from $350,000 to the $500,000 business limit in that year.[9] Furthermore, few firms claiming the SBD are large enough to be affected by the asset thresholds (Table 1). Only 0.3 percent of firms claiming the SBD have more than $8 million in capital, although they account for almost 9 percent of the total capital of SBD claimants.[10] These characteristics indicate that the asset threshold is likely to be a binding constraint for a small number of firms accounting for a relatively small percentage of investment by firms claiming the SBD.

The Enhanced SR&ED Tax Credit

Given the rapid phase-out of the SR&ED expenditure limit as (prior year) taxable income increases from $500,000 to $800,000, we expected to see a disproportionate number of firms with taxable income just below and within the phase-out range. Firms in this cluster would have an incentive to restrict investment and to use tax planning to avoid losing access to the enhanced credit. Relatively profitable firms would be constrained by the income threshold well before they reached the asset threshold.

As with the SBD, firms earning 5 percent and less on their assets would be constrained by the income and asset thresholds at the same time. However, given the gentle asset phase-out, as of 2009, for losing access to enhanced SR&ED benefits, the disincentive effects on investment continue to decline along with the rate of return on investment even as the asset threshold effects start to bind. A review of the characteristics of the firms benefiting from the enhanced SR&ED tax credit suggests that the threshold effects are not likely to be a binding constraint for a large number of firms. Most firms claiming the credit spend small amounts on R&D, have little capital and are unprofitable. In 2009, when the expenditure limit was $3 million, 99 percent of firms spent less than $2 million on R&D (and accounted for 85 percent of spending on R&D), 98 percent had less than $3 million in net capital and 73 percent were unprofitable. About one-quarter of firms claiming the credit had taxable income greater than zero but less than $400,000, but only 1.4 percent had taxable income above $400,000 and less than $500,000, the start of the taxable income phase-out range in 2009.

9 As discussed in more detail below, this information understates the number of firms susceptible to threshold effects because it does not consider special circumstances, such as a short fiscal year or association with other corporations, that reduce the business limit for specific firms.

10 Net capital assets are the sum of tangible and intangible capital less accumulated amortization plus inventories as reported in the General Index of Financial Indicators that is filed with corporate income tax returns.

Table 1: Capital Assets of Firms Claiming the Small Business Deduction in 2009

	Percentage of Firms	Percentage of Total Capital
Less than $1 million	91.1	33.8
$1 to 7.999 million	8.6	57.4
$8 to 9.999 million	0.2	3.8
$10 to 14.999 million	0.1	4.9

Source: Authors' calculations from Statistics Canada data.

EMPIRICAL ANALYSIS

The Data

We conducted our analysis using income tax data provided through Statistics Canada's Canadian Centre for Data Development and Economic Research (CDER).[11] The Centre maintains a substantial number of business-related micro-datasets, including income tax returns filed by all corporations over the 2000 to 2009 period. Our analysis makes use of a small subset of variables in this database related to claiming the SBD and the enhanced SR&ED tax credit.[12]

The Small Business Deduction

We assessed the SBD's impact on firm growth and on government revenues by examining clustering at the taxable income and asset thresholds. Our first step in analyzing clustering at the income threshold was to calculate the difference between a firm's taxable income and its business limit, which differs from the statutory limit for three reasons.[13]

- First, if a tax return does not cover a full tax year, the statutory business limit is adjusted to reflect the percentage of a full tax year covered by the return;
- second, the firm-specific business limit is adjusted if a tax return overlaps two calendar years when the income threshold changes; and
- third, the firm-specific measure captures sharing of the business limit by firms with common ownership, or associated corporations.

Tax rules treat associated corporations as a single entity when calculating the small business deduction. For example, if three firms have common ownership, the total amount of income eligible for

11 These data can only be accessed from Statistics Canada's offices in Ottawa. In order to respect taxpayer confidentiality, researchers do not have access to the names of tax filers or direct access to the data. Data analysis programs must be developed using a synthetic dataset in which some firm entries are interchanged to prevent researchers from identifying specific firms.

12 Our analysis excludes firms operating primarily in the agricultural sector because individual farmers that contribute to a R&D research corporation are considered SR&ED claimants; this treatment artificially increases the number of claimants by several thousand.

13 More precisely, the amount of income eligible for the small business deduction is the lesser of active business income earned in Canada (line 400 of schedule T2) and adjusted taxable income reported on line 405 of the T2.

the deduction for the three firms cannot exceed the statutory business limit, and the business limit is reduced as the combined taxable capital of the three firms rises above $10 million. Using the firm-specific business limit is important: there are about 146,000 firms, or just over one-quarter of all firms claiming the SBD, which belong to groups of associated corporations.

Once this difference between taxable income and the firm-specific business limit was calculated, our second step was to allocate firms eligible for the SBD to bins based on the size of the gap. If threshold effects are important, the number of firms in the bins close to zero will be larger than expected.

We examined the impact of the asset threshold by considering clustering both within and at the start of the asset phase-out range. As discussed above, firms earning less than 5 percent on their assets will not face an increase in their marginal tax rate until their assets exceed $10 million. Furthermore, the increase occurs at higher asset levels as the rate of return declines from 5 percent. As a result, our comparison of a firm's taxable income with its reduced business limit (that is, its firm-specific business limit adjusted for any excess of assets over $10 million) captures clustering throughout the asset phase-out range.

Firms with more than $10 million in assets (technically taxable capital) are required to report the amount in their tax return. In addition, members of a group of associated firms are also required to report taxable capital if the sum of their taxable capital is likely to exceed $10 million. However, in order to analyze clustering at the start of the phase-out range, we had to estimate the amount of taxable capital for other firms claiming the SBD. We did this by regressing observed taxable capital on net tangible and intangible capital, inventories and industry of operation and then using the resulting coefficients to predict taxable capital for firms not required to report it.[14]

Results

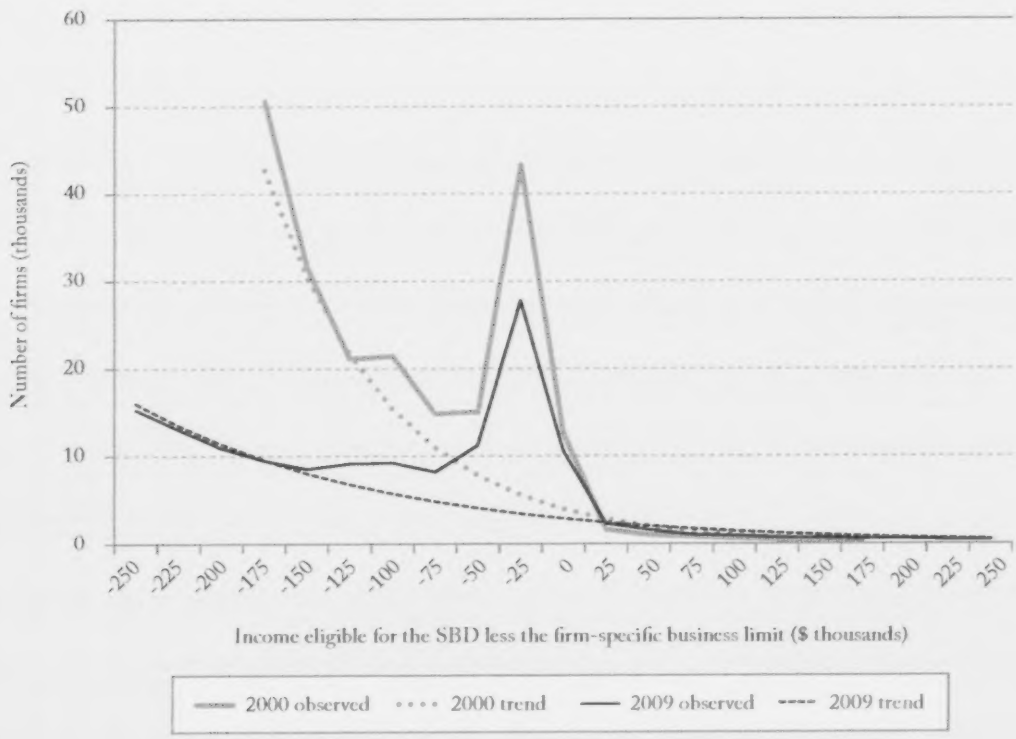
In 2000, we found noticeable clustering at the business limit (Figure 2). We determined the extra or excess number of firms in the cluster as the difference between an underlying or trend distribution and the observed distribution of firms. We calculated the trend distribution by fitting an exponential function to the observed data. For 2000, this approach suggests that there were about 54,000 extra firms in the cluster, which includes firms with taxable income ranging from $75,000 below their business limit to those with incomes exactly equal to their business limit. The excess firms in the cluster represented approximately 15 percent of claimants.

By 2009, the business limit had increased from $200,000 ($240,000 in 2009 dollars) to $500,000 while the tax advantage from remaining below the business limit had declined by about one-third. These changes contributed to a decline in the number of excess firms in the cluster to about 48,000, which represented approximately 8.5 percent of SBD claimants (Figure 2). Another consideration is that the economy was much weaker in 2009 than in 2000, which would have increased clustering at the 2000 business limit and decreased it in 2009.[15] We found only a small number of firms

14 We could have also calculated taxable capital from balance sheet items reported as part of income tax returns, but the fact that responses for these items by smaller firms is optional raises concerns about data quality.

15 According to the Bank of Canada (http://www.bankofcanada.ca/rates/indicators/ capacity-and-inflation-pressures/product-market-definitions/product-market-historical-data/) overall output was about 2 ¼ percent above its trend in 2000 but approximately 2 ½ percent below trend in 2009.

Figure 2: Clustering at the Business Limit in 2000 and 2009

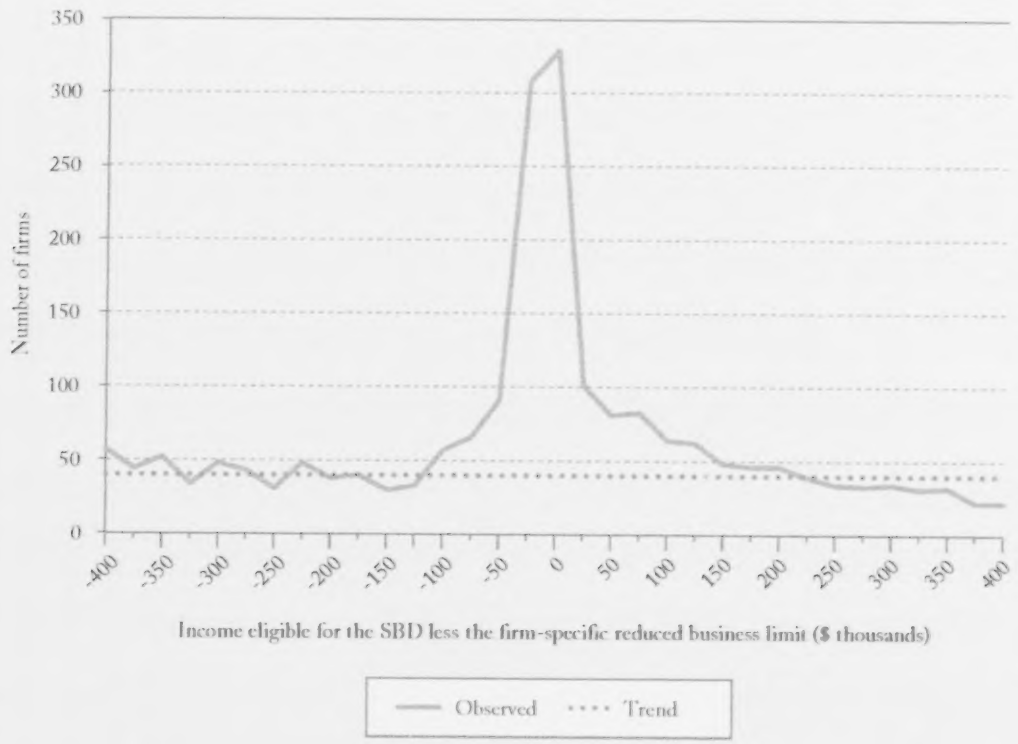


Source: Authors' calculations from Statistics Canada data.

in the cluster with between $8 million and $10 million in assets, accounting for about 3.5 percent of the total capital assets of firms in the cluster; this finding weakens the argument that clustering reflects a decision to restrain investment.

We also found evidence of clustering at the reduced business limit (Figure 3), although determining the underlying trend distribution for these firms is less clear-cut than with the income threshold. For illustrative purposes, we assumed that in the absence of clustering effects there would be 40 firms in each income category. With this assumption, there are about 850 excess firms in the cluster. Firms in the cluster either have more than $10 million in capital or are part of a group of associated corporations with more than $10 million in assets. Note that the relatively high asset threshold results in only about 3,200 firms in the asset phase-out zone, which is about 0.6 percent of all firms claiming the SBD.

Figure 3: Clustering at the Reduced Business Limit in 2009

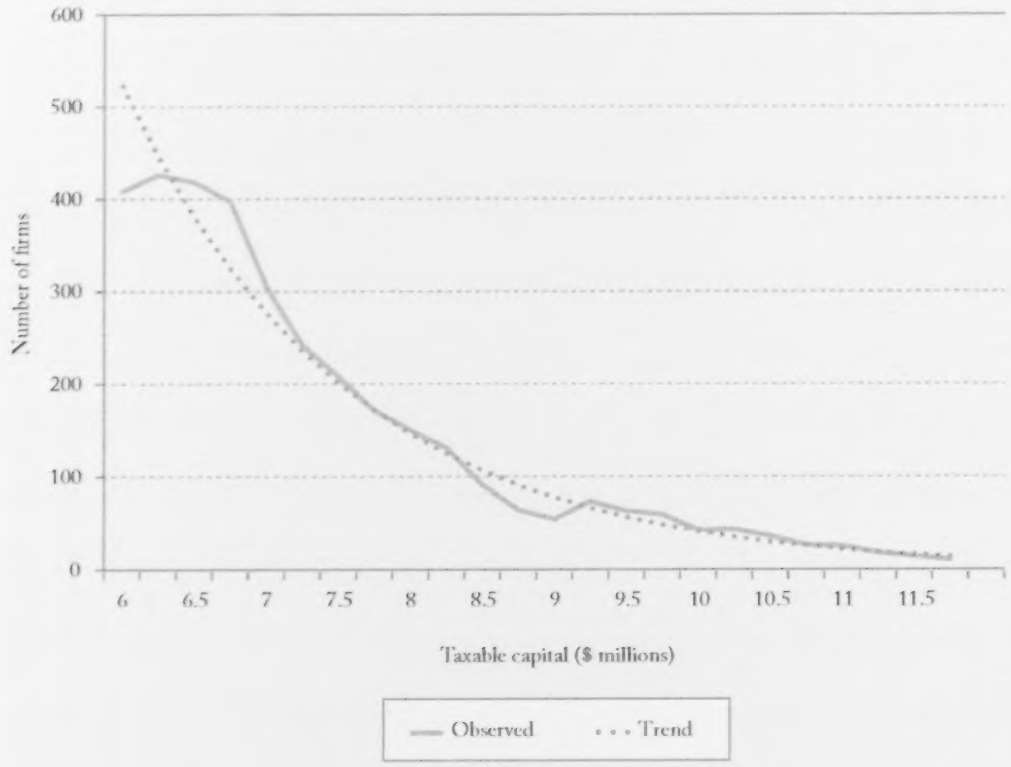


Source: Authors' calculations from Statistics Canada data.

In contrast, when we applied a simple exponential trend for firms with taxable capital in the $6 million to $12 million range, we saw no evidence of a cluster near the $10 million taxable capital threshold (Figure 4).[16] This was, on the surface at least, a surprising result given the substantial increase in effective tax rates when firms reach $10 million in assets and given that we observed clustering within the asset phase-out zone. It is perhaps less surprising given that firms in the reduced business limit cluster have assets ranging from $10 million to $15 million so clustering may not be apparent at a particular asset size, including just under $10 million. Nevertheless, Figures 3

16 In Figure 4, we show groups of associated corporations as single entities in order to capture the impact of sharing the asset limit. Associated corporations are required to file an agreement (Schedule 23 of the T2 income tax return) with the Canada Revenue Agency that lists the names and business numbers of the firms that are sharing the small business deduction. We used this information to create groups of associated corporations.

Figure 4: Firm Distribution by Asset Size, 2009



Source: Authors' calculations from Statistics Canada data.

and 4 provide convincing evidence that the asset threshold for the SBD is not creating a barrier to growth.

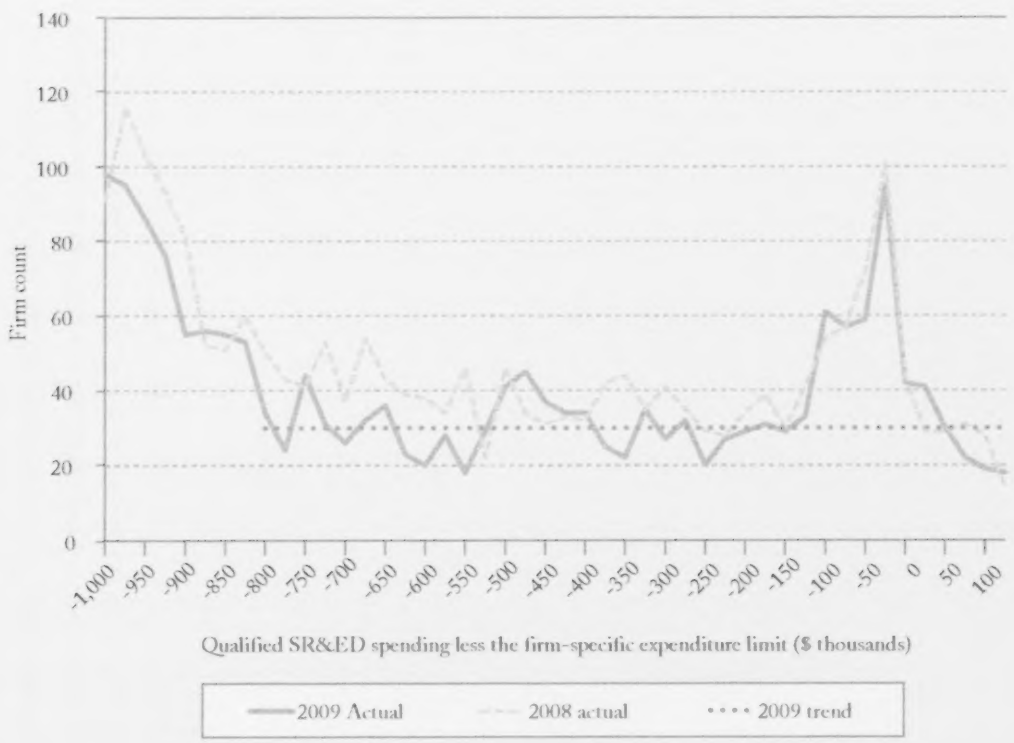
The Enhanced SR&ED Tax Credit

While we could assess the impact of the SR&ED thresholds by checking for clustering at the income, asset and spending thresholds, it is simpler and more informative to examine clustering based on the gap between firm-specific expenditure limits and actual spending on R&D. Firms calculate their specific expenditure limit as the statutory limit less an amount determined by the firm's previous year taxable capital and net income. As with the SBD, we created bins of eligible SR&ED spending relative to the firm-specific expenditure limit in $25,000 increments.

Results

We saw clear evidence of clustering in 2008 at the expenditure limit, when the disincentive effects were the highest over the 2000 to 2009 period, and in 2009 (Figure 5). Despite the much stronger disincentive effects in 2008, the amount

Figure 5: Clustering at the SR&ED Expenditure Limit, 2008 and 2009



Source: Authors' calculations from Statistics Canada data.

of clustering at the expenditure limit was not appreciably different than in 2009.[17] The threshold effects were smaller both before and after 2008, so firms may not have adjusted their behaviour in response to changed incentives in 2008. The number of excess firms in both clusters is small in absolute terms, around 170, and represents less than 1 percent of enhanced SR&ED claimants. On the other hand, the excess firms in the clusters represent about one-half of the firms that have R&D spending that is within $100,000 of their expenditure limit.

17 We calculated the trend in Figure 5 using the 2009 data.

The Social Cost of Threshold Effects

Clustering at the various thresholds reflects some combination of transitory effects, tax planning to reduce taxable income and lower investment. We cannot quantify the contribution of each of these elements, so we present estimates of the social cost assuming clustering is entirely the result of tax planning or entirely the result of decisions to restrict investment. Since the threshold effects arising from the enhanced SR&ED tax credit are small, we calculated only the SBD social costs.

Whether clustering reflects tax planning or reduced investment, governments must offset the additional revenue lost, by either reducing spending or raising taxes on other persons or businesses, both of which will harm economic performance.[18] Higher taxes unavoidably hurt the economy by reducing the rewards from working, saving and investing. Research by Dahlby and Ferede (2011), along with Baylor and Beauséjour (2004), suggests that, on average, the net loss incurred by the private sector (households and firms), from raising an additional dollar of federal tax revenue is 25 cents to 30 cents. If the source of replacement financing is higher corporate income tax rates, this cost is even greater, ranging from 40 cents to 70 cents per additional dollar of tax revenue. If firms are forgoing investment in order to retain access to the SBD, the social cost is the efficiency cost of replacing the lost tax revenue plus any forgone scale-related cost reductions.

We estimate that, in 2009, clustering at the business limit raised federal SBD claims by $195 million and provincial claims by $180 million, for a total of $375 million. We made these estimates by assuming that excess firms in the cluster would have had active business income in the first bin above their business limit without tax planning or curtailing investment.[19] If the efficiency cost of raising an additional dollar of tax revenue was 40 cents, the social cost of the additional revenue loss would have been about $150 million in 2009 (Table 2). If clustering was entirely the result of tax planning, the total social cost would be obtained by adding the costs incurred by firms to undertake the planning.

Firms in the business limit cluster have a reduced incentive to undertake investment that would generate income taxed at a higher rate than its existing capital. There is some evidence that long-run average production costs initially decline as firm size increases and that smaller firms operate in the decreasing unit-cost portion of the curve, although the evidence is dated and applies only to manufacturing industries (see, for example, Robidoux and Lester 1992). Firms choosing not to invest because of higher taxes are therefore forgoing a reduction in unit production costs. Operating at a less efficient scale imposes a social cost, but the average cost curve does not decline rapidly, so the cost penalty is not large. Robidoux and Lester (1992) reported that, for the manufacturing sector overall, a one-percent increase in inputs supports a

18 The alternative is to increase borrowing, but this not a viable long-term option.

19 The approach adopted likely understates the additional revenue loss from clustering. It effectively assumes that there would have been a cluster of firms with income just slightly above the value of their business limit in the absence of the SBD. A more likely outcome would be for firms to be distributed more smoothly above their business limit, which would raise the estimate of the additional forgone tax revenue. In the absence of any evidence on how much firms reduced taxable income to stay below their business limit, we adopted a conservative approach to estimating the revenue loss arising from clustering.

Table 2: The Social Cost of Clustering at the Business Limit

	Existing Program	50% Increase in Business Limit
	$ million	
Static government revenue loss from enriching program	N/A	370
Government revenue loss from clustering	375	35
Total provincial and federal government revenue loss	**375**	**405**
Efficiency loss from raising taxes	150	162
Production cost savings forgone	50	15
Total social cost	**200**	**177**

Source: Authors' calculations from Statistics Canada data.

1.06-percent increase in output, which implies that average costs fall by approximately 0.06 percent when output increases 1 percent.[20]

Considering both federal and provincial taxation, firms in the 2009 business limit cluster faced a 4.4 percent increase in the required return on an investment that would cause taxable income to exceed the business limit. Recent empirical work typically finds that a 1 percent increase in the cost of capital results in a 1 percent decline in capital investment and, hence, in the long-run capital stock. As a result, firms in the business-limit cluster could be keeping their capital stock and output 4.4 percent lower than it would otherwise be. If average production costs rise by 0.06 percent for each 1 percent decline in output, firms in the business limit cluster could be forgoing investment that would reduce unit production costs by about 0.25 percent (4.4 times 0.06).

Production costs of the excess firms in the business-limit cluster were approximately $21 billion,[21] so the dollar value of forgone cost savings would have been about $50 million if all the extra firms in the cluster were restricting investment. This estimate clearly overstates the impact on investment since some firms are in the cluster as a result of tax planning while others may have experienced a temporary increase in profits. On the other hand,

20 This estimate measures the slope of the average cost curve as output ranges from the level where average costs reach their minimum to one-half of this level. However, it may not be an accurate measure of scale elasticity at lower levels of output.

21 The data set used for this research does not contain complete information on production costs. As a result, we approximated them as the product of the user cost of capital and the capital stock of excess firms in the business limit cluster, divided by the long-run share of capital costs in total production costs. The capital share used in the calculation is 34 percent based on results presented in Li and Stewart (2014), page 3.

Box 4: Is the SBD Causing Entrepreneurs to Abandon an Aggressive Growth Strategy?

In 2009, a firm with $5 million in assets earning a 10 percent return would face a 4.4 percent increase in the user cost of capital on its next investment. That increase would raise production costs by about 1.5 percent – with a scale elasticity of 1.06, a $1.5 million investment would reduce production costs by about the same percentage. A rational entrepreneur would not make the investment if the target size of the firm were under $6.5 million in assets. In contrast, if the target size were $20 million, unit production costs would fall almost 18 percent, which would be more than sufficient to compensate for the higher corporate income tax rate and SBD clawback.[a] In addition to the scale-related cost savings, larger firms benefit from improved access to financing and a stronger presence in the marketplace. As a result, a rational entrepreneur is not likely to give up on growth in order to preserve access to the SBD.

a A typical firm with $5 million in assets would have capital costs of about $1.1 million and total production costs of about $3.2 million. With a scale elasticity of 1.06, an increase in the size of the firm to $20 million would reduce costs by about 18 percent (300*.06 percent), or almost $580,000. In contrast, the higher rate of corporate income tax would raise the user cost of capital by 4.4 percent, which would, in equilibrium, raise capital costs by about $190,000 (4.4%*($20 million)*.219), where .219 is an estimate of the user cost of capital in 2009. Clawback of the SBD benefit would add about $76,000 to this cost.

the estimated impact on investment could be higher if the SBD is preventing firms from growing substantially above their current size (Box 4).

The social cost of clustering at the reduced business limit is much smaller than the cost of clustering at the business limit. The additional revenue forgone because of clustering at the reduced limit is about $14 million, with a social cost of about $6 million. Applying the same methodology as outlined in the preceding paragraph, production cost savings forgone would be $7 million, so the maximum social cost of threshold effects in the reduced business limit cluster would be $13 million. Taken together, clustering at the business and reduced business limits results in a social cost of about $160 million (plus the cost of undertaking tax planning), if there are no adverse effects on investment. The cost rises to about $215 million if all firms in the clusters are restricting investment and forgoing scale-related cost reductions.[22]

Policy Options

Concern about threshold effects has led some analysts (for example, Lamman, Palacios and Veldhuis 2012) to propose raising the business limit to reduce barriers to growth. Although we find small adverse effects on investment from the

22 These are 2009 estimates. While the 30 percent decline in the small firm tax-rate advantage from 2009 to 2014 suggests the social cost would be lower in 2014, economic growth and a stronger economy (see footnote 15) would increase the number of firms in the cluster. It is therefore difficult to determine whether the social cost of clustering has increased or decreased since 2009 without examining the micro data.

thresholds, it is still of interest to explore the social cost of such a change. Our analysis of a 50 percent increase in the business limit to $750,000 in 2009 suggests that while the cost of clustering would have fallen, the static revenue loss (i.e., before any behavioural changes induced by threshold effects) from enriching the program would approximately offset this gain. This increase in the business limit would have caused a static revenue loss of $370 million (Table 2).[23] On the other hand, our analysis suggests the increase would have caused a dramatic reduction in the number of excess firms in the new cluster, so the additional claims would have been a small fraction of the induced effects on revenues (Table 2, second row).[24] Although the average size of firms increases with taxable income, the total amount of capital of excess firms in the new cluster would fall substantially so that the potential cost reductions forgone by restraining investment would be much smaller than those calculated for the existing cluster. Overall, the social cost of clustering would not change much if the business limit were increased by 50 percent.

While the social cost of clustering is substantial in absolute terms, it is small relative to the gross social cost of financing the entire SBD program. In 2009, the SBD reduced federal tax revenues by $4.37 billion (Finance Canada 2015), and we estimate that the revenue loss to provincial governments was $2.7 billion,[25] for a total fiscal cost of about $7 billion. If the source of financing is, as we assume, a higher general corporate income tax rate, the gross social cost of financing the SBD would have been about $2.8 billion,[26] with the revenue loss caused by threshold effects accounting for about 5 percent of this amount.

As discussed in Box 5, the gross revenue loss associated with the SBD overstates the net fiscal cost because there is an offsetting increase in tax revenues once a firm stops expanding or if it transitions to a large firm. Unfortunately, there is not enough information available to calculate the offsetting increase in revenues, but since both the additional revenue loss caused by clustering and the gross fiscal cost of the program are overstated, the net social cost of clustering remains small relative to the net social cost of financing the SBD.

An Illustrative Benefit-Cost Analysis of the SBD

The large gross social cost of financing the SBD raises the issue of the net social benefit of the program. Do the benefits of the program exceed the cost of financing it? Given that the net fiscal cost of the program is not known, we cannot provide a dollar estimate. We can, however, estimate the net social benefit expressed as a percentage of the net fiscal cost of the SBD.

The federal government's motivation for implementing the SBD is "to provide small corporations with more after-tax income for reinvestment and expansion" (Finance Canada 2010 p. 75). The underlying concern is that capital markets do not function well enough to supply small businesses with the financial capital required for growth. From this perspective, the SBD

23 We calculated this estimate using the micro data.

24 We calculated the hypothetical cluster by assuming that the ratio of observed to trend firms is the same as in the existing 2009 cluster.

25 Not all provincial governments provide estimates of the revenue loss arising from the small business deduction, so we developed an approximation for the provinces overall. The estimate provided in the text is a proportion of the federal loss, where the proportion depends on both the relative federal-provincial general tax rates and the relative federal-provincial small business tax advantage.

26 Recall that estimates of the efficiency cost of raising a dollar in corporate tax revenue range from 40 to 70 cents. The social cost in the text is based on an efficiency cost of 40 cents per dollar raised.

Box 5: The Net Fiscal Cost of the Small Business Deduction

The small business deduction is available only on active business income; income from passive investments is taxed at a higher rate. Furthermore, integration of the business and personal income tax means that the combined business and personal income tax paid on profits distributed as dividends or as wages to owner-operators is roughly the same for small and large businesses. When firms stop investing to expand capacity, profits are either retained and invested passively or distributed to owners. In both cases, the government taxes profits as if they were obtained from a large business. As well, businesses that transition to large-firm status pay the large-firm income tax rate on the income generated by all of their capital, so governments will eventually recover the SBD benefit in this case as well.

In other words, the return to investment financed by the SBD is taxed at the large business rate once the firm stops growing or grows beyond the SBD asset threshold. The small business deduction is, therefore, more like an interest-free loan than an outright subsidy. Calculating the net fiscal cost of the SBD requires knowledge of the timing and the amount of the tax benefit that governments eventually recover. This information is not readily available, so we were not able to determine this program's net fiscal cost.

mitigates a distortion or market failure that impedes the efficient allocation of resources between large and small firms.

We can approximate how much the SBD reduces the economic harm from this financial market failure by assuming that the reduction in marginal production costs generated by the SBD represents a social benefit. That is, we assume that the SBD narrows the gap between the private and social benefit of finance, which improves economic efficiency. This benefit depends on the change in the cost of capital (the subsidy rate) and the additional investment that it induces. The amount of induced investment in turn depends on the sensitivity of demand and supply for capital to changes in its price. Using the same assumptions about the sensitivity of investment to changes in the cost of capital as in the preceding section, a subsidy rate of 4.4 percent implies that the SBD increases economic efficiency by about 2 percent of the net fiscal cost of the program.[27]

Mitigating a capital market failure is not, however, the only benefit of the SBD. A second benefit in a small open economy such as Canada's is that a tax reduction targeted at small business will raise the overall stock of capital.[28] Financing

27 In this illustrative example, we used a simple version of the Harberger Triangle formula to determine the reduction in the marginal cost per dollar of tax revenue forgone: $.5*\Delta UC/UC*(-\varepsilon)/(1-\Delta UC/UC*\varepsilon)$, where UC is the user cost of capital and ε is the price elasticity of demand for capital.

28 In a closed economy, a targeted investment incentive will simply shift capital between sectors since the supply of savings is to a close approximation fixed. In a small open economy, the supply of foreign savings responds strongly to changes in rates of return. Although foreigners typically would not invest directly in small business, foreign savings would offset the diversion of domestic savings from the large- to small-business sector.

Table 3: Illustrative Benefit-Cost Analysis of the Small Business Deduction

	Percentage of the net fiscal cost of the SBD
Social Benefits	
Mitigate capital market failure	2.1
Tax reduction for small business	30.0
Subtotal – Benefits	*32.1*
Social Costs	
Tax increase on large business	52.5
Other costs not quantified:	
Higher administration and compliance	—
International profit shifting	—
Threshold effects on investment	—
Subtotal of quantified items – Costs	*52.5*
Net social benefit of quantified items	***-20.4***

Source: Authors' calculations from Statistics Canada data.

the targeted reduction with an increase in the general corporate income tax rate would more or less exactly offset this increase, so that the end result from the two tax changes would be a reallocation of the capital stock from the large- to the small-business sector. Such a reallocation reduces Canada's real income for two reasons. First, labour productivity in small firms (fewer than 100 employees) is about 55 percent of productivity in other firms (Baldwin, Leung and Rispoli 2014). Second, a higher tax rate on the income of large businesses would cause additional profit shifting to foreign jurisdictions in order to reduce tax liabilities, which would reduce Canada's real income.

We illustrate the potential cost of this capital reallocation by assuming that the benefit of a tax rate reduction on small business profits is 55 percent of the social cost of a tax increase on other firms.[29] The net impact of reducing taxes on small business and increasing taxes on large businesses would, therefore, amount to almost one-quarter of the net fiscal cost of the SBD; including the benefit of mitigating the capital market failure reduces this cost to about a fifth of the net fiscal

29 We developed this estimate by assuming, as in the previous section, that the GDP-weighted sum of the efficiency costs of taxing small and large businesses is 40 cents per dollar raised and that the relative efficiency costs of raising taxes is the same as relative labour productivity in the two categories of firms.

cost (Table 3). Including the social cost of threshold effects would increase this cost, as would inclusion of costs incurred to administer and apply for the SBD and the revenue loss resulting from increased profit shifting induced by higher taxes on large firms.

Nevertheless, the SBD could be providing another social benefit by playing a role in the success of startups that make the transition to larger firms. To the extent that these firms generate above-normal profits, Canada's real income would be higher. It is not possible to quantify this potential benefit. A counterargument is that there may not be a capital market failure affecting all small businesses. Some analysts express the view that financial markets are capable of assessing the credit risk of the typical small firm or that tax measures are not the best instrument for dealing with a capital market failure if it exists (Chen and Mintz 2011, pp. 3 and 19).

The overall conclusion we draw from our benefit-cost analysis is that Canada's real income would be higher if governments eliminated the SBD and used the tax revenue gained to reduce the general corporate income tax rate. It is, nevertheless, worthwhile considering other options to reduce the SBD's social cost. A counterintuitive finding is that reducing the business limit is likely to have only a small impact. Using the micro data, we calculated that a 50 percent reduction in the business limit to $250,000 would result in a static revenue gain of about $1.7 billion. However, the cluster around the new threshold would contain many more firms, and almost 40 percent of the static revenue gain could be lost through threshold effects. In addition, forgone scale-related cost savings could be somewhat higher in the new cluster. Overall, the social cost of the SBD in 2009 would have been only slightly smaller with a lower business limit.

Reducing the tax-rate advantage for small business would also make the program less generous. The social cost of the program would decline by approximately the same percentage as the reduction in the tax-rate advantage. For example, if the tax-rate advantage in 2009 had been 10.7 percent (its value in 2014) instead of 15.2 percent, a decline of 30 percent, the social cost would have fallen by 30 percent as well.

We have chosen to illustrate the social cost of the SBD on the assumption that it is being financed by a higher general corporate income tax rate largely because this financing method leaves the overall tax burden on business investment unchanged. Financing options that would result in a lower tax burden on business investment, such as higher personal income or value-added taxes, would have a lower social cost. Indeed, if the opportunity cost of the SBD is higher value-added taxes, the program would be generating a net social benefit.

CONCLUSION

Our results indicate that the thresholds for accessing the enhanced SR&ED tax credit are set high enough that its impact on investment decisions by firms is negligible. While the SBD thresholds affect more firms, the program was not acting as a substantial barrier to growth in 2009. Economic conditions have improved since then, which would increase the number of firms affected by the income threshold, but the small business tax advantage has become smaller since 2009 and will remain smaller even with the reduction to the small business tax rate announced in the 2015 federal budget.

Nevertheless, the SBD imposes a cost on the Canadian economy. The SBD is achieving its objective of allowing small business to finance more investment internally and it is inducing more investment by small firms, but the adverse effects of raising taxes to finance the subsidy and the lower relative productivity of small firms are important obstacles to realizing a net social benefit. Canada's real income would be higher if governments reduced or eliminated the small-business tax advantage and used the savings to lower the general corporate income tax rate.

References

Agrawal, Ajay, Carlos Rosell and Timothy S. Simcoe. 2014. "Do Tax Credits Affect R&D Expenditures by Small Firms? Evidence from Canada." NBER Working Paper 20615. October.

Almunia, Miguel, and Daivd Lopez-Rodriguez. 2014. "Heterogeneous Responses to Effective Tax Enforcement: Evidence from Spanish Firms." Banco de Espana Working Paper No. 1419.

Baldwin, John, Danny Leung, and Luke Rispoli 2014. "Canada–United States Labour Productivity Gap Across Firm Size Classes." The Canadian Productivity Review, Statistics Canada Catalogue no. 15-206-X – No. 033.

Best, Michael, Anne Brockmeyer, Henrik Jacobsen Kleven, Johannes Spinnewijn, and Mazhar Waseem. 2014. "Production vs. Revenue Efficiency with Limited Tax Capacity: Theory and Evidence from Pakistan." Working Paper. September.

Baylor, Maximilian, and Louis Beauséjour. 2004. "Taxation and Economic Efficiency: Results from a Canadian CGE Model." Department of Finance Working Paper 2004-10. November.

Brockmeyer, Anne. 2013. "The Investment Effect of Taxation: Evidence from a Corporate Tax Kink." London School of Economics Working Paper 13/17.

Chen, Duanjie, and Jack Mintz. 2011. "Small Business Taxation: Revamping Incentives to Encourage Growth." University of Calgary School of Public Policy Research Paper 4(7), May.

Currie, Bill, and Lawrence Scott. 2013. "The Future of Productivity: A Wake-up Call for Canadian Companies." Deloitte.

Dahlby, Bev. 2011. "Notes on the Disincentive Effects of the SR&ED Program for Growing CCPCs." Unpublished. (Available upon request from the authors.)

Dahlby, Bev, and Ergete Ferede. 2011. *What Does it Cost Society to Raise a Dollar of Tax Revenue? The Marginal Cost of Public Funds.* Commentary 324. Toronto: C.D. Howe Institute. March.

Devereux, Michael, Li Liu, and Simon Loretz. 2013. "The Elasticity of Corporate Taxable Income: New Evidence from UK Tax Records." Oxford University Centre for Business Taxation. Said Business School. Working Paper 12/23. January.

Drummond, Don. 2011. "Confessions of a Serial Productivity Researcher." *International Productivity Monitor.* 22: 3-10.

Finance Canada. 2010. *Tax Expenditures: Notes to the Estimates/Projections 2010.* Public Works and Government Services Canada.

————. 2014. "Taxation of Small Businesses in Canada" *Tax Expenditures and Evaluations 2013*, pp. 52- 68. Public Works and Government Services Canada.

————. 2015. "The Tax Expenditures" *Tax Expenditures and Evaluations 2014*. pp. 2-26. Public Works and Government Services Canada.

Garicano, Luis, Claire Lelarge, and John Van Reenen. 2012. "Firm Size Distortions and the Productivity Distribution: Evidence from France." NBER Working Paper.

Gourio, Francois, and Nicolas Roys. 2014. "Size-dependent Regulations, Firm Size Distribution, and Reallocation." *Quantitative Economics* 5: 377-416.

Harju, Jarkko, and Tuomas Matikka. 2014. "The Elasticity of Taxable Income and Income-shifting: What is 'Real' and What is Not?" Government Institute for Economic Research Working Paper 56. Helsinki. August.

Hendricks, Kenneth, Raphael Amit and Diana Whistler. 1997. "Business Taxation of Small and Medium-sized Enterprises in Canada." Technical Committee on Business Taxation Working Paper 97-11.

Kleven, Henrik Jacobsen, and Mazhar Waseem. 2013. "Using Notches to Uncover Optimization Frictions and Structural Elasticities: Theory and Evidence from Pakistan." *Quarterly Journal of Economics:* 669-723.

Lamman, Charles, Milagros Palacios, and Niels Veldhuis. 2012. "Submission to British Columbia's Expert Panel on Business Taxation." Fraser Institute. June.

Le Maire, Daniel, and Bertel Schjerning. 2012. "Tax Bunching, Income Shifting and Self-employment." EPRU Working Paper Series, No. 2012-04.

Lester, John. 2012. "Benefit-Cost Analysis of R & D Support Programs." *Canadian Tax Journal* 60 (4): 793-836.

Lester, John, and Jacek Warda. 2014. "An International Comparison of Tax Assistance for Research and Development: Estimates and Policy Implications." University of Calgary School of Public Policy Research Paper. November.

Li, Jiang, and Kenneth Stewart. 2014. "Factor substitution, factor-augmenting technical progress, and trending factor shares: the Canadian evidence." University of Victoria Department of Economics Econometrics Working Papers 1403.

Organisation for Economic Co-Operation and Development. 2013. *OECD Tax Database*. http://www.oecd.org/tax/tax-policy/tax-database.htm.

Robidoux, Benoit, and John Lester. 1992. "Econometric Estimates of Scale Economies in Canadian Manufacturing." *Applied Economics*, 24: 113-122.

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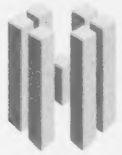

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